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his own ideals. Yale College has reason to be proud of its distinguished company of astronomers, of which LOOMIS was so prominent a member. The Lick Observatory, and every observatory in America, owes more to their efforts and influence than is easily expressed. E. S. H.

THE ROTATION OF THE SUN, [BY PROFESSOR N. C. DUNÉR, DIRECTOR OF THE OBSERVATORY OF UPSALA].

From a note in the *Astronomische Nachrichten*, No. 2968, the following very brief summary is made:

During the years 1887-8-9 Professor DUNÉR studied the laws of the rotation of the surface of the sun at different latitudes, by means of a spectroscope and a ROWLAND grating. The method employed was to compare the spectra of the two borders of the sun. One of these borders is moving towards the earth, the other is moving away from it. Hence the spectral lines of the former are shifted towards the violet end of the spectrum, while the lines of the latter are shifted towards the red end.

Measures of the amount of the displacement give a means of calculating the velocity of the motion towards or from the earth, expressed in miles, and this velocity is, of course, a measure of the angular rotation of the surface of the sun at the particular latitude in question. The measures of Professor DUNÉR were extremely precise, and the following results must be very near the truth. I have added the third column, where his results are expressed in a familiar unit:

Heliocentric Latitude.	Angle through which the sun's surface turns in 24 hours.	Period in Days.
0.4°	14.14°	25.5
15.0	13.66	26.4
30.0	13.06	27.6
45.0	11.99	30.0
60.0	10.62	33.9
74.8	9.34	38.6

Professor DUNÉR says that the values in the second column "confirm what has already been revealed by observations on the solar spots; to wit, that the times of rotation of the different zones of the solar surface are not the same, and that the equatorial zone makes a revolution in the shortest period, while the duration of a single rotation increases with the latitude. But, while solar spots are only exceptionally present in latitudes greater than ± 35° (and almost never in latitudes greater than 45°), and while 55° is the highest latitude in which any spot has ever been seen, it follows that, up to the present time, nothing is known of the rotation of the polar regions of the sun. These observations, then, extend our knowledge of the circumstances of the rotation of the sun's surface up to latitude 75°, quite in the neighborhood of the poles."

A comparison between the spectroscopic observations of Professor DUNÉR and those depending on solar spots and solar faculæ, shows that the latter give a velocity of rotation somewhat less than the former. This may be due to the fact that the spots, etc., correspond to depths in the solar atmosphere which are different from that of the layer which gives the spectra which he has observed. This peculiar law of the sun's rotation shows conclusively that it is not a rigid body, in which case every one of its layers in every latitude must necessarily rotate in the same time. It is more like a vast whirlpool where the velocities of rotation depend not only on the situation of the rotating masses as to latitude, but also as to depth beneath the exterior surface. E. S. H.

THE "SQUARE-SHOULDERED" ASPECT OF *SATURN.*

It is known that Sir WILLIAM HERSCHEL (in *Philosophical Transactions*, 1805, page 272 and Plate IX) described a "square-shouldered" aspect to the ball of the planet *Saturn*. The ball appeared to him neither circular nor elliptic, but like "a parallelogram with the four corners rounded off," in latitude 43° or thereabouts. I have lately received, through the kindness of Mr. W. H. PICKERING, a silver print of a negative of *Saturn*, taken at Wilson's Peak February 7, 1890, at 18^h 54^m, G. m. t., enlarged to a scale of $1''$ of arc = 1 millimetre, approximately. The dark south polar cap, which has been constantly visible on the planet for some time (certainly ever since the Lick Observatory has been in operation), shows far more plainly in this print than it does to the eye, even, and gives to the southern hemisphere of the planet precisely the "square-shouldered" aspect described by HERSCHEL for both hemispheres. If the northern hemisphere had been marked as the southern